Claims

1) A method of measuring the degradation in a tunable
laser comprising the steps of:

    a. performing a first set of initial measurements
       on the laser to provide a reference set of
       measurements corresponding to the performance
       of the laser when no degradation has occurred;

    b. performing a second set of measurements on the
       laser where some degradation has occurred; and

    c. effecting a comparison of the first and second
       set of measurement so as to provide a measure
       of the degradation in the laser.

2) The method as claimed in claim 1 wherein the first
set of initial measurements is provided by one or more
of the steps of:

    setting the gain current of the laser to a
    specified predetermined value;

    setting the tuning currents of the laser to
    zero;

    measuring the output power / etalon/ wavelength
    of the laser while the current of one tuning
    section is increased and while the currents in
    all other tuning sections is set to zero; and

    repeating the above measurement for all tuning
    sections of the laser.

3) The method as claimed in claim 2 wherein the
predetermined specified valued of the gain current
selected is the average gain current of the operating
points in a lookup table corresponding to the laser.

4) The method claimed in any preceding claim wherein the second set of measurements is provided by one or more of the steps of:

setting the gain current of the laser to a specified predetermined value, for example the average gain current of the operating points in the lookup table;

setting the tuning currents of the laser to zero;

measuring the output power / etalon/ wavelength of the laser while the current of one tuning section is increased and while the currents in all other tuning sections is set to zero; and

repeating the above measurement for all tuning sections of the laser.

5) The method as claimed in any preceding claim wherein on comparison of the first set of measurements with the second set of measurements by comparing wavelength or etalon responses the degradation of the device can be measured.

6) The method claimed in claim 1 where the positions of mode jumps in the two sets of measurements are compared and a transform is obtained where the mode jumps from the second set of measurements can be transformed to the same currents as the corresponding mode jumps as determined from the first measurement.

7) The method as claimed in claim 6 further comprising the step of converting the operating points of a tunable laser by this transform to obtain a new set of operating points where the new set of operating points is compensated for degradation in the laser.

8) The method claimed in claim 1 wherein the second set of measurements is provided by one or more of the steps of:

    locating a subset of mode jumps from the first measurement set; and

    re-measuring the region around each of these mode jumps in the same manner as the first set of measurements.

9) A method of compensating for a degradation of a laser diode comprising the steps of:

    monitoring transitions between two operating points of a laser while varying the currents of the second operating point;

    determining when a transition from a first wavelength to an operating point about the second does not correspond to a wavelength of the second operating point and then applying a fail status to this transition; and

    using the location of the nearest failed operating point about the second operating point to provide a vector of the degradation of the laser.

10) A method as claimed in claim 9 where the vector obtained for the degradation of the device can be used to adjust all the operating points of the laser to compensate for degradation in the laser.

11) A computer program comprising program instructions for causing a computer to perform the method of any one of claims 1 to 10.

12) A computer program as claimed in claim 11 embodied on a record medium

13) A computer program as claimed in claim 11 embodied

on a carrier signal.

14) A computer program as claimed in claim 11 embodied
on a read-only memory.

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